

## **DTC C0527**

### **Circuit Description**

The rear steering gear motor is a 3 phase DC motor. It has 3 hall effect switches inside the motor assembly. The rear wheel steering control module monitors the hall switches for proper switch position, and will shut down the system if a invalid switch combination is detected. A DTC C0527 will set at that time.

### **DTC Descriptor**

This diagnostic procedure supports the following DTC:

DTC C0527 Rear Steering Motor Position Sensor Circuit

### **Conditions for Running the DTC**

The ignition must be ON with the engine ON.

### **Conditions for Setting the DTC**

- When hall 1, hall 2, and hall 3 circuits have 12 volts as their output, simultaneously, the rear steering motor is not in a recognized, valid position by the rear wheel steering module.
- When hall 1, hall 2, and hall 3 circuits have 0 volts as their output, simultaneously, the rear steering motor is not in a recognized, valid position by the rear wheel steering module.
- The hall sensor supply circuit is open.
- The hall sensor ground circuit is open.

### **Action Taken When the DTC Sets**

- The Service 4 Wheel Steer indicator in instrument panel cluster (IPC) will be displayed.
- The code is displayed on the scan tool as DTC C0527.
- The output command to the motor is zeroed and the motor drive circuits are disabled using commands from the rear wheel steering control module to open the motor shorting relay.
- The rear wheels will be returned to the centered position.

### **Conditions for Clearing the DTC**

- Conditions for the DTC are not present.
- The module receives a clear code command from the scan tool.
- The history DTC clears after 100 malfunction-free ignition cycles.

## Diagnostic Aids

If the wiring harness to the steering gear motor is damaged in any way, it **MUST** be replaced. You can only service the connectors and terminals.

Use a scan tool to monitor the outputs of the hall-affect sensor 12-volt reference circuit. If the voltage of this circuit does not measure between 11.75-12.00 volts, inspect the harness connector of the rear wheel steering control module. Inspect the harness connector for intermittent or poor connections. Refer to **Testing for Intermittent Conditions and Poor Connections** and to **Connector Repairs** in Wiring Systems.

### Test Description

The numbers below refer to the step numbers on the diagnostic table.

**2:** This step helps the technician determine if the fault is current.

**3:** This step determines if the DTC is the result of an intermittent connection at the control module.

### DTC C0527

| Step                                                                                                                                                     | Action                                                                                                                                                                                                                                                                                 | Yes                 | No                                                                               |
|----------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|----------------------------------------------------------------------------------|
| <b>Schematic Reference: <u>Rear Wheel Steering Schematics</u></b><br><b>Connector End View Reference: <u>Rear Wheel Steering Connector End Views</u></b> |                                                                                                                                                                                                                                                                                        |                     |                                                                                  |
| 1                                                                                                                                                        | Did you perform the Diagnostic System Check - Vehicle?                                                                                                                                                                                                                                 | Go to <b>Step 2</b> | Go to <b><u>Diagnostic System Check - Vehicle</u></b> in Vehicle DTC Information |
| 2                                                                                                                                                        | 1. Install a scan tool.<br>2. Turn the ignition switch to the ON position, with the engine ON.<br>3. With a scan tool, monitor the DTC Information for DTC C0527 in the rear wheel steering control module.<br><br>Does the scan tool indicate that DTC C0527 is current?              | Go to <b>Step 3</b> | Go to Diagnostic Aids                                                            |
| 3                                                                                                                                                        | Inspect for poor connections at the harness connector of the rear wheel steering control module. Refer to <b><u>Testing for Intermittent Conditions and Poor Connections</u></b> and <b><u>Connector Repairs</u></b> in Wiring Systems.<br><br>Did you find and correct the condition? | Go to <b>Step 7</b> | Go to <b>Step 4</b>                                                              |

|   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                     |                     |
|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|---------------------|
| 4 | <p><b>IMPORTANT:</b><br/>If the wiring harness to the steering gear motor is damaged in any way, it <b>MUST</b> be replaced. You can only service the connectors and terminals.</p> <p>Inspect for poor connections at the harness connector of the rear wheel steering control module and the steering gear motor connector. Refer to <b><u>Testing for Intermittent Conditions and Poor Connections</u></b> and <b><u>Connector Repairs</u></b> in Wiring Systems. Did you find and correct the condition?</p> | Go to <b>Step 7</b> | Go to <b>Step 5</b> |
| 5 | <ol style="list-style-type: none"> <li>1. Replace the steering gear motor assembly. Refer to <b><u>Steering Gear Motor Assembly Replacement</u></b>.</li> <li>2. Use the scan tool in order to clear the DTCs.</li> <li>3. Operate the vehicle within normal operating conditions.</li> </ol> <p>Does the DTC reset?</p>                                                                                                                                                                                         | Go to <b>Step 6</b> | Go to <b>Step 7</b> |
| 6 | <p>Replace the rear wheel steering module. Refer to <b><u>Control Module References</u></b> in Computer/Integrating Systems for replacement, setup, and programming. Did you complete the replacement?</p>                                                                                                                                                                                                                                                                                                       | Go to <b>Step 7</b> | -                   |
| 7 | <ol style="list-style-type: none"> <li>1. Use the scan tool in order to clear the DTCs.</li> <li>2. Operate the vehicle within normal operating conditions.</li> </ol> <p>Does the DTC reset?</p>                                                                                                                                                                                                                                                                                                                | Go to <b>Step 2</b> | System OK           |